

(4)

Ex./INT./GN/24/2017

- (f) (i) Why is the matrix considered for sandstone classification ? (ii) Why is low-Mg calcite abundantly present within ancient limestone ? (iii) What are the major differences between the products of a debris flow and turbidity current ? 1+2+2
- (g) What are the diagenetic processes and mechanisms that influence microfabric development within shale ? 5
- (h) (i) How do you name a rock that consists of 27% intraclasts, 48% bioclasts, 15% ooid and 10% matrix ? State reason. (ii) What is geopetal structure ? What geological information you can extract from the presence of geopetal structures ? 3+2

— X —

BACHELOR OF SCIENCE EXAMINATION, 2017

(2nd Year, 3rd Semester)

GEOLOGICAL SCIENCES

Paper : V H

Sedimentology

Time : Two hours

Full Marks : 50

Use separate Answer scripts for each group.

GROUP - A (25 marks)

Answer **q.no.1** and any **three** questions.

1. What is bedform ? What difference in internal structure do you expect between 2D and 3D ripples? 10

OR

1. (a) How do you explain clast imbrication in a conglomerate deposited from tractive current ?
(b) How does laminar flow differ from turbulent flow ? What kind of flow do you expect in a river ? Justify your answer.
(c) What are the plausible explanations for grain-size bimodality in sandstone ? 3+4+3

(Turn Over)

(2)

2. How is phi-scale better than the arithmetic scale in grain-size analysis ? 5
3. "Clastic grains in a well-sorted sediment are generally well rounded"—Justify the statement with reason. What are the plausible explanations for textural inversion ? 5
4. (a) Does cumulative grain size distribution curve for a sedimentary rock give an idea about textural maturity of the sediment ? Give reasons for your answer.
(b) "Grains with high sphericity do not always possess high roundness"—Justify the statement with reason. 5
5. How does the shape of particles affect the lift force during their entrainment in a flow ? 5
6. What are flute marks ? How do they form ? 5
7. What difference do you expect in terms of internal structures in sediments deposited from suspension fall-out and through tractive mechanism ? Justify the answer. 5

(3)

GROUP - B (25 marks)

8. Answer any **five** questions.
 - (a) (i) How does siliciclastic supply affect carbonate sedimentation ? (ii) Why are primary sedimentary structures less frequent in occurrence within limestone when compared to sandstone ? 3+2
 - (b) Define "Stromatolite". What is the geological significance of inclined stromatolite ? Why are stromatolites less common in the Phanerozoic world ? 1+2+2
 - (c) (i) How do you define hardground ? How do you recognize hardground surfaces within the Phanerozoic rock record ? (ii) What is the geological significance of ooidal limestone ? 1+2+2
 - (d) How do you recognize oligomictic and polymictic conglomerates ? What are their geological significances ? What is the common imbrication pattern generally developed within fluvial conglomerate ? 2+2+1
 - (e) Why are quartz, feldspar and rock fragments considered for the sandstone classification ? 5

(Turn Over)